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REMARKS

Reconsideration of the application in view of the above amendments and the following remarks is respectfully requested.

I. Status of the Claims

Claims 1-71 are pending in this application. In the Office Action mailed on March 12, 2003, claims 1-13 were allowed, claims 14-24, 36-38, and 45-71 were withdrawn from consideration, and claims 25-35 and 41-44 were rejected under 35 U.S.C. § 103. Claim 25 has been amended and claim 30 has been canceled.

II. Affirmation of Election

In The Office Action mailed on March 12, 2003, the Examiner required restriction to one of Group I, claims 1-13 and 25-71, and Group II, claims 14-24, and election of one of Species 1 through 9 as described in the Office Action. As requested by the Examiner, Applicants hereby affirm the election, with traverse, of the invention of Species 6 of Group I, claims 1-13, 25-35 and 39-44, which election was originally made by the undersigned by telephone on March 6, 2003.

III. Rejection Under 35 U.S.C. § 103

The Examiner rejected claims 25-35 and 41-44 under 35 U.S.C. § 103 as being unpatentable over admitted prior art described on pages 1-6 of the application and shown in Figure 1 of the application, which admitted prior art is described in detail in P.B. Chu, J.T. Chen, R. Yeh, G. Lin, J.C.P Huang, B.A. Warneke, and K.S.J. Pister, "Controlled Pulse-Etching with Xenon Difluoride", *Transducers* 1997, Chicago IL, 16-19 June 1997 (hereinafter the "Chu Reference"). With respect to claim 1, the Examiner stated that the Chu Reference teaches an

etching apparatus comprising an etching chamber, a source of etching gas, and an expansion chamber in selective fluid communication with the source and the etching chamber. The Examiner further stated that the Chu Reference fails to teach a second expansion chamber in selective fluid communication with the source and the etching chamber as required by claim 1, but that the addition of a second expansion chamber would be a mere duplication of parts having no patentable significance.

The Applicants have amended claim 1 to further require that "said etching chamber be[] in selective fluid communication with a vacuum pumping source," that "said first expansion chamber hav[e] a first direct fluid connection to a vacuum pumping source," and that "said second expansion chamber hav[e] a second direct fluid connection to a vacuum pumping source," such that "said first expansion chamber may be evacuated either through said first direct fluid connection or through said etching chamber, and wherein said second expansion chamber may be evacuated either through said second direct fluid connection or through said etching chamber." Support for this amendment can be found on page 19, lines 16-18 and page 25, lines 4-7 of the application, and in Figure 10. The etching system of amended claim 1 allows each of the first and second expansion chambers to be evacuated either directly or through the etching chamber. The ability to separately evacuate each expansion chamber through the etching chamber is advantageous because the system can, near the end of an etch cycle when the expansion chamber has equilibrated with the etching chamber, draw the majority of the process gas from the expansion chamber into the etching chamber by reducing the pressure in that channel. Doing so completes the etch cycle with maximum utilization of the process gas (in a system having equal volume expansion and etching chambers, approximately half of the process gas will remain in the expansion chamber when the system reaches equilibrium), instead of the

remainder of the process gas being evacuated away without going through the etching chamber (and etching the sample) during the process of refilling the expansion chamber. Furthermore, it becomes increasingly difficult and time consuming to continue to reduce the pressure in the expansion chamber fully (to the vacuum level required for the expansion chamber prior to being refilled) through the etching chamber after the majority of the process gas has been drawn from the expansion chamber. Thus, it is advantageous to pump the remaining process gas from the expansion chamber using the direct connection to a vacuum pumping source (by-passing the etching chamber). By doing so, the other expansion chamber can be used for immediate etching. In other words, the ability to directly evacuate each expansion chamber is advantageous because once an etch cycle with one expansion chamber is fully completed (as just described), the other expansion chamber can be immediately placed in fluid communication with the etching chamber to allow that etch cycle to begin, and the expansion chamber whose etch cycle was just completed can be directly evacuated (without going through the etching chamber) and refilled with process gas without interrupting or interfering with the ongoing etching process. Such a process would be impossible in a system with a mere second expansion chamber (and no direct vacuum connections) or in a system with a single expansion chamber to which a direct vacuum connection has been added.

The Chu Reference only teaches that the expansion chamber can be evacuated through the etching chamber. It does not teach or suggest an etching system having first and second expansion chambers each having a direct fluid connection to a vacuum pumping source to allow each of the first and second expansion chambers to be individually evacuated either directly or through the etching chamber as required by amended claim 1. Applicants further note that amended claim 1 recites elements that are more than a mere duplication of parts shown in Chu.

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Specifically, merely duplicating the expansion chamber shown in Chu, which is connected to a vacuum source only through the etching chamber, does not provide the advantages, discussed above, that a system as claimed in amended claim 1 provides with its combined ability to selectively evacuate the expansion chamber directly or through the etching chamber. Accordingly, Applicants respectfully submit that amended claim 1 is allowable over the cited reference. In addition, because claims 26-29 and 31-47 depend, either directly or indirectly, from claim 1, Applicants respectfully submit that they are likewise allowable over the cited reference. Because Applicants believe that these claims are allowable due to their dependence on claim 1, Applicants will not address the Examiner's specific rejection of these claims as set forth in the Office Action, but reserve the right to do so in the future should the need arise.

CONCLUSION

Based on the foregoing remarks, Applicants respectfully submit that claims 1-13 and 25-47 are in condition for allowance.

If a telephone conference would facilitate prosecution of this application in any way, the Examiner is invited to contact the undersigned at the number provided.

Respectfully submitted,

METZ LEWIS LLC

By _____

Philip E. Levy, Reg. No. 40,700
Metz Lewis LLC
11 Stanwix Street, 18th Floor
Pittsburgh, Pennsylvania 15222
Attorneys for Applicant

(412) 918-1100

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